



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

761
3629

Applicant: Devon Taylor et al.

Title: Communication Interface for Providing Accounting Support for Print Services

Docket No.: 1565.028US1
Filed: September 7, 1999
Examiner: Unknown
Customer No.: 21186

Serial No.: 09/390954
Due Date: N/A
Group Art Unit: 2761
Confirmation No.:

Commissioner for Patents
Attn: Jackie Waldo (TC 3600)
P.O. Box 1450
Alexandria, VA 22313-1450

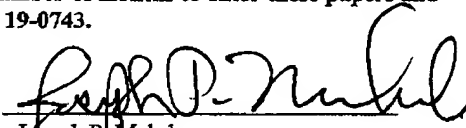
RECEIVED
OCT 22 2003
GROUP 3600

We are transmitting herewith the following attached items (as indicated with an "X"):

- ☒ A return postcard.
- ☒ A Request For Reconstruction of Patent Application (4 Pages).
- ☒ A complete copy of Prosecution History for US Application No. 09/390,954 (78 pgs.).

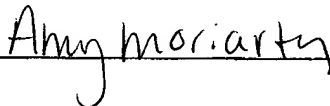
Please consider this a **PETITION FOR EXTENSION OF TIME** for sufficient number of months to enter these papers and please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
Customer Number 21186

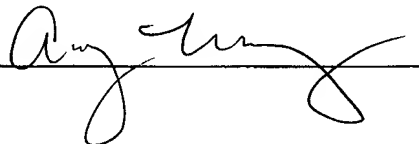
By: 
Atty: Joseph P. Mehrle
Reg. No. 45,535

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner for Patents, Attn: Jackie Waldo (TC 3600), P.O.Box 1450, Alexandria, VA 22313-1450, on this 17th day of October, 2003.

Name



Signature



SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
(GENERAL)

Customer Number 21186

S/N 09/390954

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: F. Devon Taylor et al.

Examiner: Unknown

Serial No.: 09/390954

Group Art Unit: 2761

Filed: September 7, 1999

Docket: 1565.028US1

Title: COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING
SUPPORT FOR PRINT SERVICES

REQUEST FOR RECONSTRUCTION OF PATENT APPLICATION

Commissioner for Patents
Attn: Jackie Waldo (TC 3600)
P.O.Box 1450
Alexandria, VA 22313-1450

RECEIVED
OCT 22 2003
GROUP 3600

Applicants have not received an action of any kind in connection with U.S. Patent Application Serial Number 09/390954. Correspondingly, in January of 2003 Applicants submitted a status inquiry. After still not receiving a response, the Applicants' representative began regularly contacting the Patent Office to determine the status of this application in May 2003. In October of 2003, Examiner John Weiss indicated that the application had been lost in the Patent Office and that all the Patent Office had was the original filing in an imaged format. He then issued a reconstruction request and directed Applicants' representative to Ms. Jacqueline Waldo, responsible for collecting the missing information from the Applicants.

Applicants' representative called Ms. Waldo and indicated that since the filing a number of activities have been filed with the Patent Office, namely a change of correspondence address and a revocation of the previous power of attorney along with an appointment of a new power of attorney. Accordingly, Ms. Waldo asked the Applicants to submit this correspondence along with all communications received from the Patent Office on this application and all correspondences filed with the Patent Office on this application.

Therefore, attached herewith are the complete correspondences made between Applicants and the Patent Office with respect to this application, including postcard receipts received from the Patent Office. Applicants respectfully request that this application be immediately reconstructed based on the attached and forwarded to an Examiner for immediate examination. This application has a filing date that is over 4 years old and is still not assigned to an Examiner for examination. Detailed below is a complete chronology of the correspondences and a true and original copies of the same are attached for the Patent Office's records. Applicants believe that

everything should now be in order and respectfully request that the Patent Office inform the Applicants of the same along with an indication that this application has been submitted to an Examiner for immediate examination.

Accordingly, applicants hereby petition to reconstruct the file history of the above-identified patent application by submission of copies of the following documents:

PROSECUTION TIMELINE

<u>Date</u>	<u>Action (Applicant and/or PTO)</u>
September 7, 1999	Application Filed (Pgs 1-18 and a 1 page cover sheet) Informal Drawings (3pgs) Application Transmittal (2pgs) Copy of the Express mail label and Postcard(2 pgs) Copy of PTO stamped return Postcard (1pg.).
September 23, 1999	Filing Receipt Mailed by the PTO (2pgs)
September 24, 1999	Notice of Missing Parts Mailed by the PTO (1pg.)
October 14, 1999	Response to Missing Parts Filed (2pgs) Declaration and Power of Attorney (3pgs). Assignment filed (4 pgs. and a 1 page cover sheet) Missing Parts Transmittal, a copy of the checks to cover the Missing Parts fees, a copy of the Express Mail Label, and Postcard (4pgs). A copy of PTO stamped return Postcard (1pg).
October 21, 1999	Corrected Filing Receipt Mailed by the PTO (2pgs).
January 7, 2000	Recorded Assignment mailed by the PTO (7pgs).

February 2, 2000	Information Disclosure Statement Filed (2pgs) 1449 (4pgs) A copy of the Express Mail Label and Postcard (2 pgs.) A copy of the PTO stamped return Postcard (1pg.)
August 28, 2001	Supplemental Disclosure Statement Filed (2pgs) 1449 (1pg) A copy of the Express Mail Label and Postcard (2 pgs.) A copy of the PTO stamped return Postcard (1pg.)
April 30, 2002	Change of Address filed by Applicant (2pgs) A copy of the Postcard (1 pg). A copy of PTO stamped returned postcard (1pg.)
September 26, 2002	Revocation and Power of Attorney Filed (with Change of Correspondence Address) (3pgs) A copy of the postcard and Transmittal (2pgs) A copy of PTO stamped returned postcard (1pg.)
January 22, 2003	Status Inquiry Filed (1pg). A copy of the postcard and Transmittal (2pgs). A copy of PTO stamped returned postcard (1pg.)

Copies of the documents identified in the preceding paragraph comprise the entire file history of U.S. Patent Application Serial No. 09/390954, to the best knowledge of Applicants' Representatives.

Applicant respectfully requests notification of reconstruction of the instant application and of the occurrence of the initial patent examination process. The U.S. Patent Office is invited to telephone Applicant's attorney ((513) 942-0224) to facilitate prosecution of this application.

RECONSTRUCT PATENT APPLICATION FILE WITH THE PTO

Serial Number: 09/390954

Filing Date: September 7, 1999

Title: Communication Interface for Providing Accounting Support for Print Services

Page 4

Dkt: 1565.028US1

If necessary, please charge any additional fees or credit overpayment to Deposit Account
No. 19-0743.

Respectfully submitted,

F. DEVON TAYLOR ET AL.

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.

P.O. Box 2938

Minneapolis, MN 55402

(513) 942-0224

Date 10-17-03

By

Joseph P. Mehrle

Reg. No. 45,535

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner for Patents Attn: Jackie Waldo (TC 3600), P.O.Box 1450, Alexandria, VA 22313-1450 on this 17th day of October, 2003.

Name

Amy Moriarty

Signature

[Signature]

In re Patent Application of: F. Devon Taylor, et. al.

Title: Communication Interface for Providing Accounting Support for Print Services

Serial No.: 09/390,954

Filing Date: September 7, 1999

Receipt is hereby acknowledged for the following in the United States Patent and Trademark Office:

CONTENTS: Status Inquiry (1 Page); a Return Postcard and TRANSMITTAL SHEET.

Mailed: January 22, 2003
JPM/Imp

Docket No.: 1565.028US1
Due Date: N/A



RECEIVED
OCT 22 2003
GROUP 3600

In re Patent Application of: F. Devon Taylor, et. al.

Title: Communication Interface for Providing Accounting Support for Print Services

Serial No.: 09/390,954

Filing Date: September 7, 1999

Receipt is hereby acknowledged for the following in the United States Patent and Trademark Office:

CONTENTS:
SHEET.

Status Inquiry (1 Page); a Return Postcard and TRANSMITTAL

Mailed: January 22, 2003
JPM/lmp

Docket No.: 1565.028US1
Due Date: N/A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: F. Devon Taylor, et. al.
Title: Communication Interface for Providing Accounting Support for Print Services
Docket No.: 1565.028US1
Filed: September 7, 1999
Examiner: Unknown
Serial No.: 09/390,954
Due Date: N/A
Group Art Unit: Unknown

Commissioner for Patents
Washington, D.C. 20231

We are transmitting herewith the following attached items (as indicated with an "X"):

☒ A return postcard.
☒ Status Inquiry (1 Page).

Please consider this a PETITION FOR EXTENSION OF TIME for sufficient number of months to enter these papers and please charge any additional required fees or credit overpayment to Deposit Account No. 19-0743.

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938, Minneapolis, MN 55402 (612-373-6900)

By: Joseph P. Mehrle
Atty: Joseph P. Mehrle
Reg. No. 45,535

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231, on this 22ND day of January, 2003.

LISA POSORSKE
Name

Lisa Posorske
Signature

Customer Number 21186

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
(GENERAL)

P.O. Box 2938, Minneapolis, MN 55402 (612-373-6900)

S/N 09/390954

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	F. D. Taylor et al.	Examiner:	Unknown
Serial No.:	09/390954	Group Art Unit:	Unknown
Filed:	September 7, 1999	Docket:	1565.028US1
Title:	COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICES		

STATUS INQUIRY

Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

The above-identified patent application was filed on September 7, 1999. Applicants' last communication from the Patent Office was the Notice of Recordation of Assignment dated January 7, 2000.

Kindly inform us as to the status of this application, directing such notice to the attention of the below-signed attorney for Applicants.

Respectfully submitted,

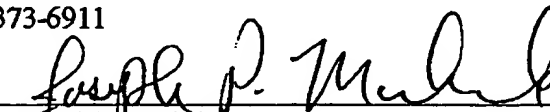
F. D. TAYLOR ET AL.

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(612) 373-6911

Date 1-21-03

By


Joseph P. Mehrle
Reg. No. 45,535

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 22ND day of January, 2003.

Name

LISA POSORSKE

Signature



Receipt is hereby acknowledged for the following in the United States Patent and Trademark Office:

In re application of F. Devon Taylor, et al.

Title: Communication Interface for Providing Accounting Support for Print Services

Serial No. 09/390,954

Filed: September 7, 1999

CONTENTS: Revocation and Power of Attorney (2 pages); Change of Correspondence Address (1 page); and transmittal document (1 pg.).

JPM:CMG:slr

Mailed: September 26, 2002

Docket: 1565.028US1



Receipt is hereby acknowledged for the following in the United States Patent and Trademark Office:

In re application of F. Devon Taylor, et al.

Title: Communication Interface for Providing Accounting Support for Print Services

Serial No. 09/390,954

Filed: September 7, 1999

CONTENTS: Revocation and Power of Attorney (2 pages); Change of Correspondence Address (1 page); and transmittal document (1 pg.).

JPM:CMG:slr

Docket: 1565.028US1

Mailed: September 26, 2002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: F. Devon Taylor, et al.

Title: Communication Interface for Providing Accounting Support for Print Services

Docket No.: 1565.028US1

Filed: September 7, 1999

Examiner: Unknown

Serial No.: 09/390,954

Due Date: N/A

Group Art Unit: 2761

Commissioner for Patents

Washington, D.C. 20231

We are transmitting herewith the attached:

- ☒ Revocation and Power of Attorney (2 pages)
- ☒ Change of Correspondence Address (1 page).
- ☒ A return postcard.

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938, Minneapolis, MN 55402 (612-373-6900)

By: Joseph P. Mehrle
Name: Joseph P. Mehrle
Reg. No. 45,535
JPM:CMG:slr

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231, on this 26th day of September, 2002.

Sarah L. Reinhard
Name

Sarah L. Reinhard
Signature

PATENT

Applicant:	F. Devon Taylor et al	Examiner: NYA
Serial No.:	09/390,954	Group Art Unit: 2761
Filed:	September 7, 1999	Docket: 1565.028US1
Title:	COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICES	

Reg. No. 39,295 Novell, Inc., Intellectual Property Counsel
1800 South Novell Place, Mailstop PRV F331, Provo, Utah 84606

REVOCATION AND POWER OF ATTORNEY

Serial Number: 09/390,954

Filing Date: September 7, 1999

Title: COMMUNICATION INTERFACE FOR PROVIDING
ACCOUNTING SUPPORT FOR PRINT SERVICES

Page 2
Dkt: 1565. 028051

CERTIFICATE UNDER 37 CFR '3.73(b)

Novell , Inc. hereby certifies that it is the assignee of the entire right, title and interest in the patent application identified above by virtue of an assignment from the inventors filed

10/14/1999 and recorded on Reel 010302 , Frames 0406 - 0410 .

To the best of my knowledge and belief, title is in Novell , Inc., the assignee.

Pursuant to 37 C.F.R. '3.73(b) I hereby declare that I, Mr. Ryan Richards, am empowered to sign this certificate on behalf of Novell , Inc., the assignee.

I hereby declare that all statement made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true.

Please direct all correspondence in this case to:

Schwegman, Lundberg, Woessner & Kluth, P.A.
P.O. Box 2938
Minneapolis, MN 55402
Telephone No. (612) 373-6900

Date 8/12/02

By



Ryan Richards

Title: Vice President, Deputy General Counsel

S/N 09/390,954

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	F. Devon Taylor, et al.	Examiner:	Unknown
Serial No.:	09/390,954	Group Art Unit:	2761
Filed:	September 7, 1999	Docket:	1565.028US1
Title:	COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICES		

NOTIFICATION OF CHANGE OF CORRESPONDENCE ADDRESS

Commissioner for Patents
Washington, D.C. 20231

Applicant respectfully requests that all future correspondence in the above-identified patent application be addressed to:

Customer Number 21186, whose address is:

Schwegman, Lundberg, Woessner & Kluth, P.A.
P. O. Box 2938
Minneapolis, MN 55402

Respectfully submitted,

By Applicant's Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(513) 942-0224

Date 9-26-02 By Joseph P. Mehrle
Joseph P. Mehrle
Reg. No. 45,535

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 26th day of September, 2002.

Name Sarah L. Reinhard

Signature Sarah L. Reinhard

N/A

ASJ

Date Due: n/a

Date Mailed: 4/30/02

Date Filed: September 7, 1999

Inventor(s): F. Devon Taylor et al.

Title: COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERI

File No.: 112024-0051

Serial No.: 09/390,954

Group Art Unit: 2761

Honorable Commissioner of Patents and Trademarks: We are forwarding herewith:

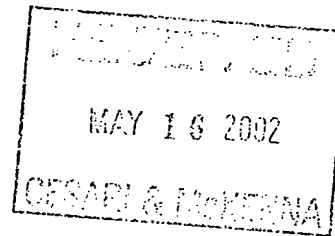
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Initials: ASJ/caw

With First Class Certificates of Mailing

CESARI and McKENNA, LLP



Date Due: n/a

Date Mailed: 4/30/02

Date Filed: September 7, 1999

Inventor(s): F. Devon Taylor et al.

Title: COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SER

File No.: 112024-0051

Serial No.: 09/390,954

Group Art Unit: 2761

Honorable Commissioner of Patents and Trademarks: We are forwarding herewith:

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Kindly have the mail room stamp this card and return it to us so that we may know that the above mentioned papers were duly received.

Initials: ASJ/caw

With First Class Certificates of Mailing

CESARI and McKENNA, LLP

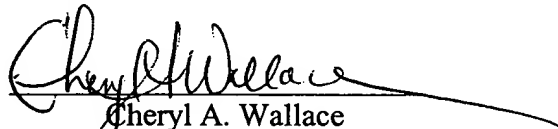
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re The Application of:)	
F. Devon Taylor et al.)	
Serial No.: 09/390,954)	Examiner: Not Yet Assigned
Filed: September 7, 1999)	
For: COMMUNICATION INTERFACE)	Art Unit: 2761
FOR PROVIDING ACCOUNTING)	
SUPPORT FOR PRINT SERVICES)	

Cesari and McKenna, LLP
88 Black Falcon Avenue
Boston, MA 02210
April 30, 2002

CERTIFICATE OF MAILING

I hereby certify that the following paper is being deposited with the United States Postal Service as first-class mail in an envelope addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231, on April 30, 2002.


Cheryl A. Wallace

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

CHANGE OF CORRESPONDENCE ADDRESS

Pursuant to 37 C.F.R. §1.33(a), we request that the correspondence address for the above-identified patent application be changed to:

Charles J. Barbas
Cesari and McKenna, LLP
88 Black Falcon Avenue
Boston, MA 02210

Please charge any additional fee occasioned by this paper to our Deposit Account

No. 03-1237.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "A. Sidney Johnston", written over a horizontal line.

A. Sidney Johnston

Reg. No. 29,548

CESARI AND MCKENNA, LLP

88 Black Falcon Avenue

Boston, MA 02210-2414

(617) 951-2500

Date Due: N/A

Date Mailed: 8/28/01

Date Filed: September 7, 1999

Inventor(s): F. Devon Taylor et al.

Title: COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICE

N/A ASJ

File No.: 112024-0051

Serial No.: 08/390,954

Group Art Unit: 2781

Honorable Commissioner of Patents and Trademarks: We are forwarding herewith:

☒ Information Disclosure Statement

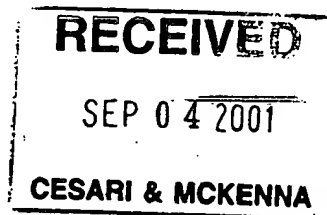
☒ PTO-1449 and Copies of References

Kindly have the mail room stamp this card and return it to us so that we may know that the above mentioned papers were duly received.

Initials: ASJ/cab

With Express Certificates of Mailing : EL736448421US

CESARI and McKENNA, LLP



Date Due: N/A
Date Mailed: 8/28/01
Date Filed: September 7, 1999
Inventor(s): F. Devon Taylor et al.

File No.: 112024-0051
Serial No.: 09/390,954
Group Art Unit: 2761

Title: COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICE

Honorable Commissioner of Patents and Trademarks: We are forwarding herewith:

☒ Information Disclosure Statement

☒ PTO-1449 and Copies of References

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EL 736448421 US

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1822/

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re The Application of:
F. Devon Taylor et al.

Serial No.: 09/390,954

Filed: September 7, 1999

For: COMMUNICATION INTERFACE
FOR PROVIDING ACCOUNTING
SUPPORT FOR PRINT SERVICES

Examiner: Not Yet Assigned

Art Unit: 2761

Cesari and McKenna, LLP
88 Black Falcon Avenue
Boston, MA 02210
August 28, 2001

EXPRESS-MAIL DEPOSIT

“Express Mail” Mailing-Label Number: EL736448421US

The following papers are being deposited with the United States Postal Service
“Express Mail Post Office to Addressee” service pursuant to 37 C.F.R. §1.10:

X Information Disclosure Statement

X PTO-1449 and Copies of References

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re The Application of:)	
F. Devon Taylor et al.)	
)	Examiner: Not Yet Assigned
Serial No.: 09/390,954)	
)	
Filed: September 7, 1999)	Art Unit: 2761
)	
For: COMMUNICATION INTERFACE)	
FOR PROVIDING ACCOUNTING)	
SUPPORT FOR PRINT SERVICES)	
		Cesari and McKenna, LLP
		88 Black Falcon Avenue
		Boston, MA 02210
		August 28, 2001

"Express Mail" Mailing-Label Number: EL736448421US

Honorable Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

INFORMATION-DISCLOSURE STATEMENT

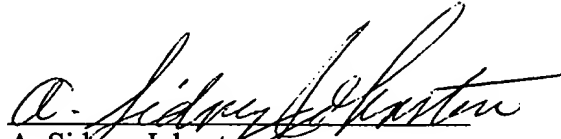
In keeping with the duty of candor and good faith owed to the Patent and Trade-mark Office, the Applicants wish to bring to the Examiner's attention the references listed on the accompanying form PTO-1449. A copy of each listed reference is enclosed.

To the extent required by 37 C.F.R. §1.98(a)(3), Applicants have described what they consider to be the relevance of any foreign-language reference. It is understood that the Office may find additionally relevant material in these or other references.

Please charge any additional fee occasioned by this paper to our Deposit Account

No. 03-1237.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "A. Sidney Johnston".

A. Sidney Johnston
Reg. No. 29,548
CESARI AND MCKENNA, LLP
88 Black Falcon Avenue
Boston, MA 02210-2414
(617) 951-2500

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

1

9

1

Complete if Known

Application Number

09/390,954

Filing Date

September 7, 1999

First Named Inventor

F. Devon Taylor et al.

Group Art Unit

2761

Examiner Name

Not Yet Assigned

Attorney Docket Number

112024-0051

U.S. PATENT DOCUMENTS

[illegible]

FOREIGN PATENT DOCUMENTS

[illegible]

**Examiner
Signature**

Date Considered

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number. ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.**

Date Due: N/A

Date Mailed: February 2, 2000

Date Filed: September 7, 1999

Inventor(s): F. Devon Taylor et al.

Title: COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT

Honorable Commissioner of Patents and Trademarks: We are forwarding herewith

☒ Information Disclosure Statement

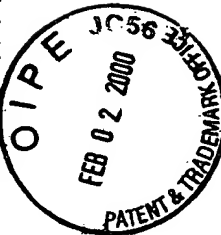
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File No.: 112024-0051
Serial No.: 09/390,354
Group Art Unit: 2761

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Date Due: N/A

Date Mailed: February 2, 2000

Date Filed: September 7, 1999

Inventor(s): F. Devon Taylor et al.

Title: COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICE

File No.: 112024-0051

Serial No.: 09/390,954

Group Art Unit: 2761

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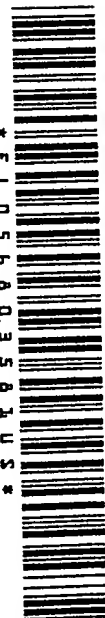
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re The Application of:)	
F. Devon Taylor et al.)	
)	Examiner: Not Yet Assigned
Serial No.: 09/390,954)	
)	
Filed: September 7, 1999)	Art Unit: 2761
)	
For: COMMUNICATION INTERFACE)	
FOR PROVIDING ACCOUNTING)	
SUPPORT FOR PRINT SERVICES)	
		Cesari and McKenna, LLP
		30 Rowes Wharf
		Boston, MA 02110
		February 2, 2000

EXPRESS-MAIL DEPOSIT

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The following Information-Disclosure Statement, Form PTO-1499, and cited references are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service pursuant to 37 C.F.R. §1.10, in an envelope addressed to the Assistant Commissioner for Patents, Washington D.C. 20231, on February 2, 2000.

Honorable Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

INFORMATION-DISCLOSURE STATEMENT

In keeping with the duty of candor and good faith owed to the Patent and Trademark Office, Applicants wish to bring to the Examiner's attention the references listed on the accompanying form PTO-1449. A copy of each listed reference is enclosed.

To the extent required by 37 C.F.R. §1.98(a)(3), Applicants have described what they consider to be the relevance of any foreign-language reference. It is understood that the Office may find additionally relevant material in these or other references.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

A handwritten signature in cursive script, reading "Christopher K. Gagne", written over a horizontal line.

Christopher K. Gagne
Reg. No. 36,142
CESARI AND MCKENNA, LLP
30 Rowes Wharf
Boston, MA 02110-2699
(617) 951-2500

Form PTO-1449				Docket No: 112024-0051		Serial No. 09/390,954	
INFORMATION-DISCLOSURE STATEMENT				Applicant: F. Devon Taylor et al.			
				Filed: September 7, 1999		Group 2761	
U. S. Patent Documents							
Ex.		Doc. No.	Date	Name	Class	Subcl.	Filed
Foreign Patent Documents							
			Date	Country	Class	Subcl.	Filed
OTHER DOCUMENTS (Including Author, Title, Date, Pages, Etc)							
		Mark McKell et al., <i>An Introduction to Novell Distributed Print Services (NDPS)</i> , April 1998, pages 3-13.					
		Mark McKell, <i>Printing in NetWare 5 with NDPS 2.0</i> , September 1998, pages 81-96.					
		Bob Ross, et al., <i>NetWare Print Services, Technical Development Conferences</i> , 3-92, pages API-8 – API-14.					
		Spencer Cottam, et al., <i>Optimizing Printing with NetWare 4.x and 3.1x</i> , September 1993, pages 1-17.					
Examiner:					Date Considered:		
*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

Form PTO-1449			Docket No: 112024-0051		Serial No. 09/390,954		
INFORMATION-DISCLOSURE STATEMENT			Applicant: F. Devon Taylor et al.				
			Filed: September 7, 1999		Group 2761		
U. S. Patent Documents							
Ex.		Doc. No.	Date	Name	Class	Subcl.	Filed
Foreign Patent Documents							
			Date	Country	Class	Subcl.	Filed
OTHER DOCUMENTS (Including Author, Title, Date, Pages, Etc)							
			Scott Isaacson, <i>NetWare Distributed Print Services (NDPS) Architecture Overview</i> , 1996, pages 67-73.				
			Edward Liebing, <i>NetWare 4 Printing From the Ground Up</i> , September/October 1995, pages 32-43.				
			Edward Liebing, <i>NetWare 4.1 Print Services, An Architectural Overview</i> , July/August 1995, pages 44-51.				
			Edward Liebing, et al., <i>Understanding and Troubleshooting Novell's Print Services</i> , May 1992, pages 1-20.				
Examiner:					Date Considered:		
*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

Form PTO-1449		Docket No: 112024-0051		Serial No. 09/390,954			
INFORMATION-DISCLOSURE STATEMENT		Applicant: F. Devon Taylor et al.					
		Filed: September 7, 1999		Group 2761			
U. S. Patent Documents							
Ex.		Doc. No.	Date	Name	Class	Subcl.	Filed
Foreign Patent Documents							
			Date	Country	Class	Subcl.	Filed
OTHER DOCUMENTS (Including Author, Title, Date, Pages, Etc)							
		Craig Whittle, <i>NetWare Distributed Print Services (NDPS) Server Architecture and Information Model</i> , 1996, pages 82-88.					
		Roy Studyvin, <i>Developing Smart Client Applications for NetWare Distributed Print Services (NDPS)</i> , 1996, pages 98-101.					
		Dale Bethers, <i>NDPS Interoperability Issues with Legacy Printing Systems and Printers</i> , 1996, pages 104-108.					
		Roy Studyvin, et al., <i>Adding Value to Applications Using NetWare Distributed Print Services (NDPS)</i> , 1996, pages 76-80.					
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Form PTO-1449				Docket No: 112024-0051		Serial No. 09/390,954	
INFORMATION-DISCLOSURE STATEMENT				Applicant: F. Devon Taylor et al.			
				Filed: September 7, 1999		Group 2761	
U. S. Patent Documents							
Ex.		Doc. No.	Date	Name	Class	Subcl.	Filed
Foreign Patent Documents							
			Date	Country	Class	Subcl.	Filed
OTHER DOCUMENTS (Including Author, Title, Date, Pages, Etc)							
			Hugo Parra, <i>NDPS Brokered Services for the Smart Global Network</i> , 1996, pages 90-96.				
Examiner:				Date Considered:			
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CESARI AND MCKENNA, LLP
CHARLES J. BARBAS, ESQ.
30 ROWES WHARF
BOSTON, MASSACHUSETTS 02110

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RECORDATION DATE: 10/14/1999

REEL/FRAME: 010302/0406

NUMBER OF PAGES: 5

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:

TAYLOR, DEVON

DOC DATE: 10/08/1999

ASSIGNOR:

DAHNEKE, BART

DOC DATE: 10/08/1999

ASSIGNOR:

BETHERS, DALE

DOC DATE: 10/08/1999

ASSIGNOR:

CHRISTENSEN, BRAD P.

DOC DATE: 10/13/1999

ASSIGNEE:

NOVELL, INC.
122 EAST 1700 SOUTH
PROVO, UTAH 84606-6194

SERIAL NUMBER: 09390954

FILING DATE: 09/07/1999

PATENT NUMBER:

ISSUE DATE:

010302/0406 PAGE 2

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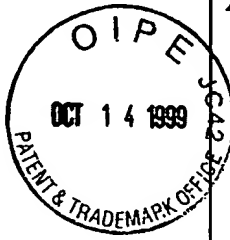


101173751

To the Honorable commissioner of Patents
Please record the attached original document.

1. Name of conveying party(ies):

Devon Taylor
Bart Dahneke
Dale Bethers
Brad P. Christensen



Additional name(s) of conveying
party(ies) attached? _____ Yes ☒ No

3. Nature of conveyance:

☒ Assignment **MRD 10.14.99**
____ Merger
____ Security Agreement
____ Change of Name
____ Other

Execution Dates: 10/08/99 and 10/13/99

2. Name and address of receiving party(ies):

Name: Novell, Inc.

Street Address: 122 East 1700 South

City: Provo

State: Utah Zip: 84606-6194

Additional name(s) & address(es)
attached? _____ Yes ☒ No

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution
date of the application is:

A. Patent Application No.(s)

09/390,954

B. Patent No. (s)

Additional numbers attached? _____ Yes ☒ No5. Name and address of party to whom
correspondence concerning document should be
mailed:

Name: Charles J. Barbas, Esq.
CESARI AND MCKENNA, LLP

Street Address:
30 Rowes Wharf
City: Boston State: MA Zip: 02110

6. Total number of applications and
patents involved:..... 1

7. Total fee (37 CFR 3.41) \$40.00

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9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true
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Charles J. Barbas
Charles J. Barbas, 32,959

10-14-99

Date

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ASSIGNMENT

Whereas We, F. Devon Taylor, who reside at 1195 North 730 East, Pleasant Grove, UT 84062, , Bart Dahneke, who reside at 1467 West 1500 North, Provo, Utah 84604, , Dale J Bethers, who reside at 4162 West 9860 North, Pleasant Grove, Utah 84062, , and Brad P. Christensen, who reside at 625 East 100 North, Alpine, Utah 84004, , have made certain inventions or discoveries (or both) set forth in an application for Letters Patent of the United States of America entitled COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICES, identified by Cesari and McKenna File No. 112024-0051, the specification of which was filed on September 7, 1999, and accorded Serial Number 09/390,954; and

Whereas Novell, Inc., whose address is 122 East 1700 South, Provo, Utah 84606-6194, and which, together with its successors and assigns, is hereinafter called "Assignee," is desirous of acquiring the title, rights, benefits, and privileges hereinafter recited;

Now, Therefore, for valuable consideration furnished by Assignee to us, receipt and sufficiency of which we hereby acknowledge, we hereby, without reservation:

1. Assign, transfer, and convey to Assignee our entire right, title, and interest in and to said inventions and discoveries, said application for Letters Patent of the United States of America, any and all other applications for Letters Patent on said inventions and discoveries in whatsoever countries, including all divisional, renewal, substitute, continuation, continuation-in-part, and Convention applications based in whole or in part upon said inventions or discoveries, or upon said applications, and any and all Letters Patent, reissues, reexaminations, and extensions of Letters Patent granted for said inventions and discoveries or upon said applications, and every priority right that is or may be predicated upon or arise from said inventions, said discoveries, said applications, and said Letters Patent;
2. Authorize Assignee to file patent applications in any or all countries on any or all of said inventions and discoveries in our names or in the name of Assignee or otherwise as Assignee may deem advisable, under the International Convention or otherwise;
3. Authorize and request the Commissioner of Patents and Trademarks of the United States of America and the empowered officials of all other governments to issue or transfer all said Letters Patent to Assignee, as assignee of the entire right, title, and interest therein or otherwise as Assignee may direct;
4. Warrant that we have not knowingly conveyed to others any right in said inventions, discoveries, applications, or patents or any license to use the same or to make, use, or sell anything embodying or utilizing any of said inventions or discoveries; and that we have good right to assign the same Assignee without encumbrance;
5. Bind our heirs, legal representatives and assigns, as well as ourselves, to do, upon Assignee's request and at Assignee's expense, but without additional consideration to us or them, all acts reasonably serving to assure that the said inventions and discoveries, the said patent applications, and the said Letters Patent shall be held and enjoyed by Assignee as fully and entirely as the same could have been held and enjoyed by us, our heirs, legal representatives, and assigns if this assignment had not been made;

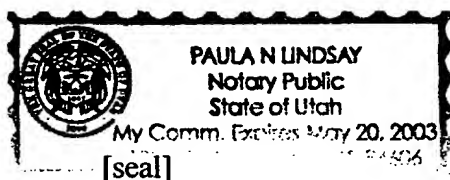
and particularly to execute and deliver to Assignee all lawful application documents including petitions, specifications, and oaths, and all assignments, disclaimers, and lawful affidavits in form and substance as may be requested by Assignee; to communicate to Assignee all facts known to us relating to said inventions and discoveries or the history thereof; and to furnish Assignee with any and all documents, photographs, models, samples, and other physical exhibits in our control or in the control of our heirs, legal representatives or assigns which may be useful for establishing the facts of our conceptions, disclosures, and reduction to practice of said inventions and discoveries.

In testimony of which we have executed this Assignment as an instrument under seal on the dates indicated next to our names.

10-8-99 F. Devon Taylor
Date F. Devon Taylor, Inventor

State of Utah)
County of Utah)ss.

On this 8TH day of October, 1999, before me appeared F. Devon Taylor, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.



Paula N Lindsay
Notary Public

10-8-99

Date

B. Dahneke

Bart Dahneke, Inventor

State of Utah

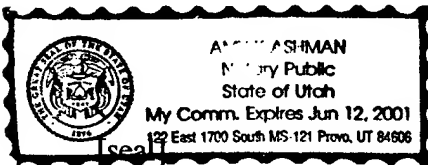
)

)ss.

County of Utah

)

On this 8th day of October, 1999, before me appeared Bart Dahneke, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.



Ashley Ashman
Notary Public

8 Oct 99

Date

Dale J Bethers

Dale J Bethers, Inventor

State of Utah

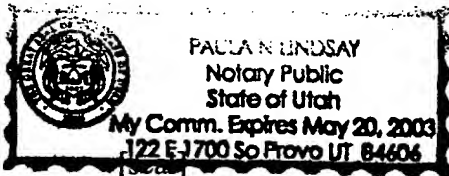
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On this 8th day of October, 1999, before me appeared Dale J Bethers, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.

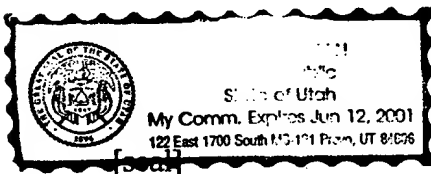


Paula N. Lindsay
Notary Public

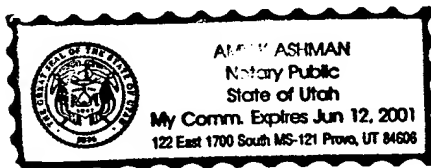
10/13/99 Brad P. Christensen
Date Brad P. Christensen, Inventor

State of Utah)
County of Utah)ss.

On this 13th day of October, 1999, before me appeared Brad P. Christensen, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.



Alfred Ashman
Notary Public



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APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTORNEY DOCKET NO.	DRWGS	TOT CL	IND CL
09/390,954	09/07/99	2761	\$896.00	112024-0051	3	17	3

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CESARI AND MCKENNA
30 ROWES WHARF
BOSTON MA 02110

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OCT 25 1999

CESARI AND MCKENNA

CTB
N/A 10/25/99

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts of Application" ("Missing Parts Notice") in this application, please submit any corrections to this Filing Receipt with your reply to the "Missing Parts Notice." When the PTO processes the reply to the "Missing Parts Notice," the PTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s) **F. DEVON TAYLOR, PLEASANT GROVE, UT; BART DAHNEKE,**
PROVO, UT; DALE J. BETHERS, PLEASANT GROVE, UT; BRAD P.
CHRISTENSEN, ALPINE, UT.

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TITLE

COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICES

PRELIMINARY CLASS: 705

DATA ENTRY BY: DILLON, LAWANDA

TEAM: 03 DATE: 10/21/99



(See reverse for new important information)

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Date Filed: September 7, 1999
Inventor(s): F. Devon Taylor et al.
Title: COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICES

File No.: 112024-0051
Serial No.: 09/390,954
Group Art Unit: 2761

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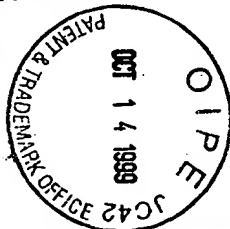
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Date Filed: September 7, 1999
Inventor(s): F. Devon Taylor et al.

File No.: 112024-0051
Serial No.: 09/390,954
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Title: COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICES

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BOSTON, MA 02110

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10/14/99

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⑈018110⑈ ⑆011000028⑆ ⑈11872140⑈

[Signature]

CESARI AND McKENNA, LLP
30 ROWES WHARF
BOSTON, MA 02110

STATE STREET BANK
AND TRUST COMPANY
BOSTON, MA 02101 021
5-2-110

PAY
TO THE
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OF

FORTY DOLLARS & ZERO CENTS
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WASHINGTON, D C 20231

DATE

10/14/99

AMOUNT

\$40.00

⑈018110⑈ ⑆011000028⑆ ⑈11872140⑈

[Signature]

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2469860

FEE TRANSMITTAL

Patent fees are subject to annual revision on October 1.

These are the fees effective October 1, 1997.

Small Entity payments must be supported by a small entity statement, otherwise large entity fees must be paid. See Forms PTO/SB/09-12.

See 37 C.F.R. §§ 1.27 and 1.28.

TOTAL AMOUNT OF PAYMENT (\$) 930

Complete If Known

Application Number 09/390,954
Filing Date September 7, 1999
First Named Inventor F. Devon Taylor et al.
Examiner Name Not Yet Assigned
Group / Art Unit 2761
Attorney Docket No. 112024-0051

METHOD OF PAYMENT (check one)

1. ☐ The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:

Deposit Account Number 03-1237

Deposit Account Name Cesari and McKenna, LLP

- ☒ Charge Any Additional Fee Required Under 37 C.F.R. §§1.16 and 1.17 ☐ Charge the Issue Fee Set in 37 C.F.R. §§1.18 at the Mailing of the Notice of Allowance

2. ☒ Payment Enclosed:
☒ Check ☐ Money ☐ Other Order

FEE CALCULATION

1. BASIC FILING FEE

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
101	760	201	380	Utility filing fee	760
106	310	206	155	Design filing fee	
107	480	207	240	Plant filing fee	
108	760	208	380	Reissue filing fee	
114	150	214	75	Provisional filing fee	
SUBTOTAL (1)				(\$)	760

2. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid
17	20**	0 x 18 = 0	0
3	3**	0 x 78 = 0	0
Multiple Dependent			0

**or number previously paid, if greater; For Reissues, see below

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
103	18	203	9	Claims in excess of 20
102	78	202	39	Independent claims in excess of 3
104	260	204	130	Multiple dependent claim, if not paid
109	78	209	39	**Reissue independent claims over original patent
110	18	210	9	**Reissue claims in excess of 20 and over original patent
SUBTOTAL (2)				(\$) 0

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Small Entity				Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
105	130	205	65	Fee Surcharge - late filing fee or oath	130
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English Specification	
147	2,520	147	2,520	For filing a request for reexamination	
112	920	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	380	216	190	Extension for reply within second month	
117	870	217	435	Extension for reply within third month	
118	1,360	218	680	Extension for reply within fourth month	
128	1,850	128	925	Extension for reply within fifth month	
119	300	219	150	Notice of Appeal	
120	300	220	150	Filing a brief in support of an appeal	
121	260	221	130	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,210	241	605	Petition to revive - unintentional	
142	1,210	242	605	Utility Issue fee (or reissue)	
143	430	243	215	Design Issue fee	
144	580	244	290	Plant Issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Petitions related to provisional applications	
126	240	126	240	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	40
146	760	246	380	Filing a submission after final rejection (37 CFR 1.129(a))	
149	760	249	380	For each additional invention to be examined (37 CFR 1.129(b))	
Other (specify)					
Other fee (specify)					
SUBTOTAL (3)				(\$)	170

*Reduced by Basic Filing Fee Paid

SUBMITTED BY

Typed or Printed Name Charles J. Barbas

Signature

Charles J. Barbas

Date

October 14, 1999

Complete (if applicable)

Reg. Number

32,959

Deposit Account User ID

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re The Application of:)	
F. Devon Taylor et al.)	
Serial No.: 09/390,954)	Examiner: Not Yet Assigned
Filed: September 7, 1999)	
For: COMMUNICATION INTERFACE)	Art Unit: 2761
FOR PROVIDING ACCOUNTING)	
SUPPORT FOR PRINT SERVICES)	
		Cesari and McKenna, LLP
		30 Rowes Wharf
		Boston, MA 02110
		October 14, 1999

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Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:


RESPONSE TO NOTICE TO FILE MISSING PARTS OF APPLICATION

Enclosed in response to the Notice to File Missing Parts of Application-Filing Date Granted mailed September 24, 1999, is a Declaration for Patent Application executed by the inventors, along with a check for \$890.00 to cover the filing fee and surcharge for this Response. The above-referenced application filed in the Patent and Trademark Office is the application that the inventors executed by signing the enclosed Declaration.

Also enclosed is an Assignment and a check in the amount of \$40.00 to cover the recordation fee.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,



Charles J. Barbas
Reg. No. 32,959
CESARI AND MCKENNA, LLP
30 Rowes Wharf
Boston, MA 02110-2699
(617) 951-2500

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below-named inventor, I hereby declare that:

My residence, post-office address, and citizenship are as stated below next to my name.

I believe I am an original, first, and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICES, the specification of which was filed on September 7, 1999, and accorded Serial Number 09/390,954 .

I hereby state that I have reviewed and understand the contents of the above-identified application specification, including the claims, as amended by any amendment specifically referred to herein.

I acknowledge the duty to disclose all information known to me that is material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate filed by me on the same subject matter having a filing date before that of the application on which priority is claimed: None.

I hereby claim the benefit under Title 35, United States Code §119(e) of the following U.S. provisional application: None.

I hereby claim the benefit under Title 35, United States Code §120, of the United States Application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United State Code, §112, I acknowledge the duty to disclose all information that is material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56, and which became available to me between the filing date of the prior application and the national or PCT international filing date of this application: None.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint Michael E. Attaya, Reg. No. 31,731; Charles J. Barbas, Reg. No. 32,959; Joseph H. Born, Reg. No. 28,283; Robert A. Cesari, Reg. No. 18,381; Yong S. Choi, Reg. No. 43,324; Brian C. Dauphin, Reg. No. 40,983; Steven J. Frank, Reg. No. 33,497; Christopher K. Gagne, Reg. No. 36,142; A. Sidney Johnston, Reg. No. 29,548; William A. Loginov, Reg. No. 34,863; John F. McKenna, Reg. No. 20,912; Martin J. O'Donnell, Reg. No. 24,204; Thomas C. O'Konski, Reg. No. 26,320; Michael R. Reinemann, Reg. No. 38,280; Rita M. Rooney, Reg. No. 30,585; Heather B. Shapiro, Reg. No. 41,305; Patricia A. Sheehan, Reg. No. 32,301; and Joseph Stecewycz, Reg. No. 34,442, Cesari and McKenna, LLP, 30 Rowes Wharf, Boston, Mass. 02110, jointly, and each of them severally, my attorneys and attorney, with full power of substitution, delegation and revocation, to prosecute this application, to make alterations and amendments therein, to receive the patent and to transact all business in the Patent and Trademark Office connected therewith. Please direct all telephone calls to Charles J. Barbas at (617) 951-2500. Please address all correspondence to Charles J. Barbas.

F. Devon Taylor 10-8-99
F. Devon Taylor Date

Residence: 1195 North 730 East
Pleasant Grove, UT 84062

Citizenship United States of America

Post Office Address: Same As Above

B. Dahneke 10-8-99
Bart Dahneke Date

Residence: 1467 West 1500 North
Provo, Utah 84604

Citizenship United States of America

Post Office Address: Same As Above

Dale J Bethers 8 Oct 99
Dale J Bethers Date

Residence: 4162 West 9860 North
Pleasant Grove, Utah 84062

Citizenship United States of America

Post Office Address: Same As Above

Brad P. Christensen 10/13/29
Brad P. Christensen Date

Residence: 625 East 100 North
Alpine, Utah 84004

Citizenship United States of America

Post Office Address: Same As Above

RECORDATION FORM COVER SHEET
PATENTS ONLY

To the Honorable commissioner of Patents and Trademarks:
Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Devon Taylor
Bart Dahneke
Dale Bethers
Brad P. Christensen

Additional name(s) of conveying
party(ies) attached? _____ Yes ☒ No

2. Name and address of receiving party(ies):

Name: Novell, Inc.

Street Address: 122 East 1700 South

City: Provo

State: Utah Zip: 84606-6194

Additional name(s) & address(es)
attached? _____ Yes ☒ No

3. Nature of conveyance:

☒ Assignment
____ Merger
____ Security Agreement
____ Change of Name
____ Other

Execution Dates: 10/08/99 and 10/13/99

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution
date of the application is:

A. Patent Application No.(s)

09/390,954

B. Patent No. (s)

Additional numbers attached? _____ Yes ☒ No

5. Name and address of party to whom
correspondence concerning document should be
mailed:

Name: Charles J. Barbas, Esq.
CESARI AND MCKENNA, LLP
Street Address:
30 Rowes Wharf
City: Boston State: MA Zip: 02110

6. Total number of applications and
patents involved:..... 1

7. Total fee (37 CFR 3.41)\$40.00
☒ Enclosed

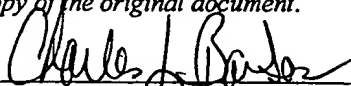
____ Authorized to be charged to deposit
account

8. Deposit account no. 03-1237 (Attach duplicate
copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

*To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true
copy of the original document.*


Charles J. Barbas, 32,959

10-14-99

Date

Total number of pages comprising cover sheet:

ASSIGNMENT

Whereas We, F. Devon Taylor, who reside at 1195 North 730 East, Pleasant Grove, UT 84062, , Bart Dahneke, who reside at 1467 West 1500 North, Provo, Utah 84604, , Dale J Bethers, who reside at 4162 West 9860 North, Pleasant Grove, Utah 84062, , and Brad P. Christensen, who reside at 625 East 100 North, Alpine, Utah 84004, , have made certain inventions or discoveries (or both) set forth in an application for Letters Patent of the United States of America entitled COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICES, identified by Cesari and McKenna File No. 112024-0051, the specification of which was filed on September 7, 1999, and accorded Serial Number 09/390,954; and

Whereas Novell, Inc., whose address is 122 East 1700 South, Provo, Utah 84606-6194, and which, together with its successors and assigns, is hereinafter called "Assignee," is desirous of acquiring the title, rights, benefits, and privileges hereinafter recited;

Now, Therefore, for valuable consideration furnished by Assignee to us, receipt and sufficiency of which we hereby acknowledge, we hereby, without reservation:

1. Assign, transfer, and convey to Assignee our entire right, title, and interest in and to said inventions and discoveries, said application for Letters Patent of the United States of America, any and all other applications for Letters Patent on said inventions and discoveries in whatsoever countries, including all divisional, renewal, substitute, continuation, continuation-in-part, and Convention applications based in whole or in part upon said inventions or discoveries, or upon said applications, and any and all Letters Patent, reissues, reexaminations, and extensions of Letters Patent granted for said inventions and discoveries or upon said applications, and every priority right that is or may be predicated upon or arise from said inventions, said discoveries, said applications, and said Letters Patent;
2. Authorize Assignee to file patent applications in any or all countries on any or all of said inventions and discoveries in our names or in the name of Assignee or otherwise as Assignee may deem advisable, under the International Convention or otherwise;
3. Authorize and request the Commissioner of Patents and Trademarks of the United States of America and the empowered officials of all other governments to issue or transfer all said Letters Patent to Assignee, as assignee of the entire right, title, and interest therein or otherwise as Assignee may direct;
4. Warrant that we have not knowingly conveyed to others any right in said inventions, discoveries, applications, or patents or any license to use the same or to make, use, or sell anything embodying or utilizing any of said inventions or discoveries; and that we have good right to assign the same Assignee without encumbrance;
5. Bind our heirs, legal representatives and assigns, as well as ourselves, to do, upon Assignee's request and at Assignee's expense, but without additional consideration to us or them, all acts reasonably serving to assure that the said inventions and discoveries, the said patent applications, and the said Letters Patent shall be held and enjoyed by Assignee as fully and entirely as the same could have been held and enjoyed by us, our heirs, legal representatives, and assigns if this assignment had not been made;

and particularly to execute and deliver to Assignee all lawful application documents including petitions, specifications, and oaths, and all assignments, disclaimers, and lawful affidavits in form and substance as may be requested by Assignee; to communicate to Assignee all facts known to us relating to said inventions and discoveries or the history thereof; and to furnish Assignee with any and all documents, photographs, models, samples, and other physical exhibits in our control or in the control of our heirs, legal representatives or assigns which may be useful for establishing the facts of our conceptions, disclosures, and reduction to practice of said inventions and discoveries.

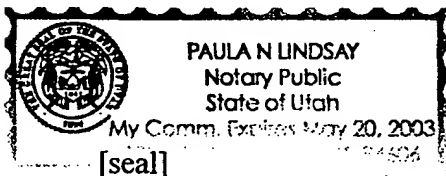
In testimony of which we have executed this Assignment as an instrument under seal on the dates indicated next to our names.

10-8-99
Date

F. Devon Taylor
F. Devon Taylor, Inventor

State of Utah)
County of Utah)ss.

On this 8TH day of October, 1999, before me appeared F. Devon Taylor, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.



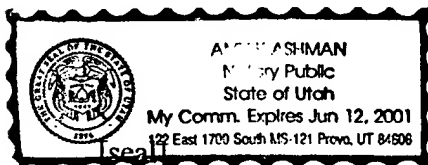
Paula N Lindsay
Notary Public

10-8-99
Date

B. Dahneke
Bart Dahneke, Inventor

State of Utah)
County of Utah)ss.
)

On this 8th day of October, 1999, before me appeared Bart Dahneke, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.



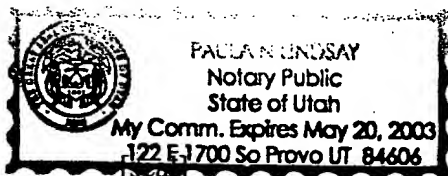
Andrew Ashman
Notary Public

8 Oct 99
Date

Dale J Bethers
Dale J Bethers, Inventor

State of Utah)
County of Utah)ss.
)

On this 8th day of October, 1999, before me appeared Dale J Bethers, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.

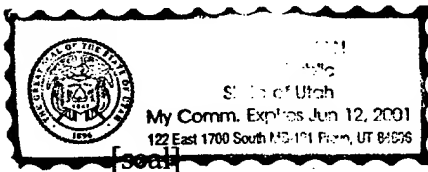


Paula N. Lindsay
Notary Public

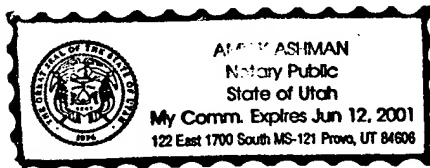
10/13/99 Brad P. Christensen
Date Brad P. Christensen, Inventor

State of Utah)
County of Utah)ss.

On this 13th day of October, 1999, before me appeared Brad P. Christensen, to me known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged the same to be his free act and deed.



Amy Ashman
Notary Public



11/24/99
CJB
11/24 9/27/99 - Msg Parts
CU msg Parts 10/24/99
Msg Parts 11/24/99



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO./TITLE
--------------------	---------------------	-----------------------	---------------------------

09/390,954 09/07/99 TAYLOR

F 112024-0051

0222/0924

CHARLES J BARBAS
CESARI AND MCKENNA
30 ROWES WHARF
BOSTON MA 02110

NOT ASSIGNED

SEP 27 1999

2761

DATE MAILED:

09/24/99

NOTICE TO FILE MISSING PARTS OF APPLICATION
Filing Date Granted

An Application Number and Filing Date have been assigned to this application. The items indicated below, however, are missing. Applicant is given TWO MONTHS FROM THE DATE OF THIS NOTICE within which to file all required items and pay fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a). If any of items 1 or 3 through 5 are indicated as missing, the SURCHARGE set forth in 37 CFR 1.16(e) of ☐ \$65.00 for a small entity in compliance with 37 CFR 1.27, or ☒ \$130.00 for a non-small entity, must also be timely submitted in reply to this NOTICE to avoid abandonment.

If all required items on this form are filed within the period set above, the total amount owed by applicant as a
☐ small entity (statement filed) ☒ non-small entity is \$ 890.00.

☒ 1. The statutory basic filing fee is:

- ☒ missing.
☐ insufficient.

Applicant must submit \$ 760.00 to complete the basic filing fee and/or file a small entity statement claiming such status (37 CFR 1.27).

☐ 2. Additional claim fees of \$ _____, including any multiple dependent claim fees, are required.

\$ _____ for _____ independent claims over 3.

\$ _____ for _____ dependent claims over 20.

\$ _____ for multiple dependent claim surcharge.

Applicant must either submit the additional claim fees or cancel additional claims for which fees are due.

☒ 3. The oath or declaration:

- ☒ is missing or unexecuted.
☐ does not cover the newly submitted items.
☐ does not identify the application to which it applies.
☐ does not include the city and state or foreign country of applicant's residence.

An oath or declaration in compliance with 37 CFR 1.63, including residence information and identifying the application by the above Application Number and Filing Date is required.

☐ 4. The signature(s) to the oath or declaration is/are by a person other than inventor or person qualified under 37 CFR 1.42, 1.43 or 1.47.

A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.

☐ 5. The signature of the following joint inventor(s) is missing from the oath or declaration:

An oath or declaration in compliance with 37 CFR 1.63 listing the names of all inventors and signed by the omitted inventor(s), identifying this application by the above Application Number and Filing Date, is required.

☐ 6. A \$50.00 processing fee is required since your check was returned without payment (37 CFR 1.21(m)).

☐ 7. Your filing receipt was mailed in error because your check was returned without payment.

☐ 8. The application does not comply with the Sequence Rules.

See attached "Notice to Comply with Sequence Rules 37 CFR 1.821-1.825."

☐ 9. OTHER:

Direct the reply and any questions about this notice to "Attention: Box Missing Parts."

A copy of this notice **MUST** be returned with the reply.

Customer Service Center
Initial Patent Examination Division (703) 308-1202

PART 1 - ATTORNEY/APPLICANT COPY

FILING RECEIPT



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
ASSISTANT SECRETARY AND COMMISSIONER
OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTORNEY DOCKET NO.	DRWGS	TOT CL	IND CL
09/390,954	09/07/99	2761	\$0.00	112024-0051	3	17	3

CHARLES J BARBAS
CESARI AND MCKENNA
30 ROWES WHARF
BOSTON MA 02110

CJB
M/A 9/27/99
SEP 27 1999
Filing
Receipt

Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts of Application" ("Missing Parts Notice") in this application, please submit any corrections to this Filing Receipt with your reply to the "Missing Parts Notice." When the PTO processes the reply to the "Missing Parts Notice," the PTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s) F. DEVON TAYLOR.

IF REQUIRED, FOREIGN FILING LICENSE GRANTED 09/23/99
TITLE
COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT
SERVICES

PRELIMINARY CLASS: 705

DATA ENTRY BY: DILLON, LAWANDA

TEAM: 03 DATE: 09/23/99



(See reverse for new important information)

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "FOREIGN FILING LICENSE GRANTED" followed by a date appears on the reverse side of this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.11. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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Inventor(s): F. Devon Taylor et al.

Title: COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICES

File No.: 112024-0051

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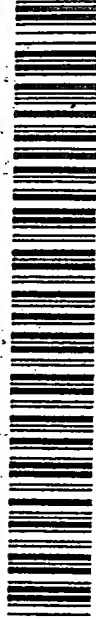
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F. Devon Taylor et al.)	
Serial No.: Not Yet Assigned)	Examiner: Not Yet Assigned
Filed: September 7, 1999)	
For: COMMUNICATION INTERFACE)	Art Unit: Not Yet Assigned
FOR PROVIDING ACCOUNTING)	
SUPPORT FOR PRINT SERVICES)	
)	
		Cesari and McKenna, LLP
		30 Rowes Wharf
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		First Inventor or Application Identifier F. Devon Taylor et al.	
		Title COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT FOR PRINT SERVICES	
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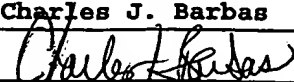
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Signature		Date	September 7, 1999

UNITED STATES PATENT APPLICATION

of

F. Devon Taylor

Bart Dahneke

Dale J. Bethers

and

Brad P. Christensen

for a

**COMMUNICATION INTERFACE FOR PROVIDING ACCOUNTING SUPPORT
FOR PRINT SERVICES**

FIELD OF THE INVENTION

The invention relates generally to print services that are available on a computer network and, more specifically, to a method and apparatus for efficiently providing accounting support for such network-based print services.

BACKGROUND OF THE INVENTION

Computer hardware is becoming increasingly distributed and remote, resulting in networks of computers for providing services and solving problems in concert rather than as stand-alone systems. Although such distributed services networks generally facilitate problem solving, they also increase the need for flexibility and functionality in software
10 executing on the computers. An example of a distributed services computer network is a client-server system comprising a collection of client nodes, e.g., workstations or personal computers, that communicate over a network with various server nodes. The servers are typically computers having hardware and software elements that provide a set of services, or operations, for use by the clients in order to increase the efficiency of their
15 operations.

Several types of networks, including local area networks (LANs), may be employed in the client-server system. A LAN is a limited area network that typically consists of a transmission medium for interconnecting the client and server nodes. The nodes coupled to the network typically communicate by exchanging discrete frames or
20 packets of data according to predefined protocols. In this context, a protocol consists of a set of rules defining how the nodes interact with each other. Communication in the client-server system typically takes the form of frame or packet exchanges, wherein the clients send requests to the servers, which perform their services and communicate results back to the clients. A typical service provided by a server is a conventional queue-based
25 printing service.

Queue-based print services are generally based upon the creation and linking of three components: a printer, print queues and a print server. Setting up a queue-based printing system is a complicated task requiring a user on a client node to install a printer driver and then "capture" a port to a printer. Broadly stated, software executing on the client submits a print job into a first queue on the print server where an accounting service retrieves the job to perform bill processing. Thereafter, the job is loaded into a second queue where it is stored while waiting to be serviced by the printer. The accounting service logic executing on the print server examines the data stream of the print job to determine resource consumption for billing purposes (e.g., billing for sheets of paper or data printed).

While this complicated queue-based printing system works well, it is rather time consuming and inefficient in terms of resource consumption. Specifically, the accounting service software on the print server must examine the data stream of a print job in order to perform the appropriate accounting function. In addition, queue-based printing requires insertion and retrieval of print jobs to and from a plurality of queue structures. Such an approach is inefficient in terms of the use of client and server resources since read and write operations associated with the various data structures consume those resources.

SUMMARY OF THE INVENTION

The invention comprises an application-to-application communication interface between an accounting service application and a printer agent application residing on a computer network. The interface is preferably embodied as novel application programming interface (API) functions or calls between the applications that provide accounting support for print services, including tracking the production of print jobs and the resources consumed by those jobs. The accounting support services provided by the novel API communication interface facilitate computing of charges by the accounting application for print services and materials used by print clients.

In the illustrative embodiment, the accounting application and printer agent preferably reside on a print server of the network; however, in an alternate embodiment, each

application may reside on a separate network entity. The accounting application registers with the printer agent to provide the agent with, e.g., addresses for the API print service calls. A print client on the network submits print jobs directly to the printer agent rather than into queues as in the conventional queue-based printing system. The novel APIs
5 allow the accounting service application to discover and obtain information about the print jobs as they are created and processed by the printer agent. Such information enables the accounting application to leverage use of functions directed to acquiring and setting attributes for these print jobs, thereby extending the utility of those functions for the accounting application.

10 According to the invention, the printer agent employs the novel print service APIs (i) before a print job is created, (ii) after the print job is created and (iii) when processing of the print job is complete. Broadly stated, the first print service API is called by the printer agent when the client submits a request to create a print job. The accounting application can either reject the print job, accept the print job or instruct the printer agent to
15 put an accounting hold on the print job. In the latter case, the job does not print until the accounting application removes the hold.

The second print service API is called by the printer agent when the creation of the print job is complete, but before the job is scheduled for printing. This function call is similar to the first API, with the exception that it includes a job identifier so that the
20 accounting application can evaluate and act upon the attributes of the job, and a path to a file directory where corresponding print data is stored. As with the first API, the accounting application can reject the print job, accept the job or instruct the printer agent to put an accounting hold on the job. The third print service API is called by the printer agent when processing and/or printing of the print job is completed. The third function
25 provides a job identifier and a file path to a corresponding document data file associated with the job so that the accounting application can evaluate the completed job and perform any appropriate accounting operations.

Advantageously, the inventive print service APIs provide an extensive set of information about print jobs that is generally more complete than that provided by conventional print systems. In particular, the novel communication interface provides develop-
30

ers with information needed to render decisions about print jobs as requests are received by the printer agent and as print jobs are created and processed.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and further advantages of the invention may be better understood by referring to the following description in conjunction with the accompanying drawings in which like reference numerals indicate identical or functionally similar elements:

Fig. 1 is a block diagram of a computer network including a collection of interconnected client and server computers;

Fig. 2 is a schematic block diagram of a client-server system that may be advantageously used with the present invention; and

Fig. 3 is a highly schematized diagram of software components of the server computer that may be advantageously used with the present invention.

DETAILED DESCRIPTION OF THE ILLUSTRATIVE EMBODIMENTS

Fig. 1 is a schematic block diagram of a network 100 comprising a collection of interconnected computers 110, 300. Each computer typically comprises a central processing unit (CPU) 102, a memory unit 104 and an input/output (I/O) unit 106 interconnected by a system bus 108. The memory unit 104 may comprise storage locations typically composed of, e.g., random access memory devices, which are addressable by the CPU 102 and the I/O unit 106. An operating system, portions of which are typically resident in memory and executed by the CPU, functionally organizes the computer by, *inter alia*, invoking network operations in support of application programs executing on the CPU. It will be apparent to those skilled in the art that other processor and memory means, including various computer readable media, may be used for storing and executing program instructions pertaining to the inventive communication interface and calls described herein.

The I/O unit 106 connects the computer to a transmission medium 150 and to a mass storage device, such as data store 115, and/or a conventional printer 116. The data

store 115 may comprise at least one disk configured as a database for storing information relating to, e.g., objects that represent components of a printing architecture that may advantageously used with the present invention. Typically the I/O unit 106 receives information, such as control and data signals, from a keyboard or mouse (not shown) and provides that information to the CPU 102 for storage/retrieval of information from the data store 115, for output to the printer 116 or for transfer over the transmission medium 150.

In the illustrative embodiment, the network 100 is organized in accordance with a client-server architecture wherein computers 110 may comprise personal computers or workstations configured as "clients" for interaction with users and computers 300 are configured as "servers" that perform services as directed by the clients. For example, the server 300 may be configured as a print server having a locally-attached printer 116. In another embodiment of the invention, the printer 116 may be directly-attached to the transmission medium 150.

The transmission medium 150 may comprise a local area network (LAN) or collection of LANs cooperating to form a larger network, such as the Internet. Collectively, the LANs may be configured to form a topology of internetworked computers that communicate by exchanging data packets according to a predefined set of protocols. Communication among the computers may be effected by reliable communication over Transmission Control Protocols/Internet Protocol (TCP/IP) sessions. It should be noted that other conventional techniques and protocols, such as Remote Procedure Calls (RPC) or the Internet Packet Exchange (IPX) protocol, may be advantageously used with the present invention.

Fig. 2 is a schematic block diagram of a client-server system 200 that may be advantageously used with the present invention wherein the client node 110 is coupled to the server node 300 by way of transmission medium 150. Resident in each node are application programs 212, 262 and operating systems 220, 270 configured to provide a communication function, such as a RPC function. The RPC function establishes a session between the client and server nodes for execution of a specific service. The RPC is typically embedded in software programs to make a remote call appear "local" to the nodes. Client-server communication thus takes the form of procedure calls utilizing local

stub procedures. Specifically, the applications interact with stub procedure software 222, 272 by exchanging parameter requests. Each stub procedure operates to arrange, i.e., “flatten”, the parameters into a predetermined message format according to the computer type.

5 The RPC function initiated by the client application 212 may transfer data or request the server application 262 to perform an operation, such as a print operation. Transport entities 224, 274 are also provided as software processes within transport layers of protocol stacks resident in the nodes. The entity 224 interacts with the stub procedure 222 to receive the message, format it into a packet and pass it to a network adapter
10 216 for transmission over the medium 150. The transport entities 224, 274 provide a reliable, cost-effective data transport between the client and server, independent of the physical network medium. An example of such reliable transport is the conventional TCP transport mechanism.

 When the packet arrives at the server 300, a network adapter 276 passes it to the
15 transport entity 274 and onto the server stub procedure 272, which unflattens the parameters. The stub procedure then calls the server application 262 and passes the parameters in a conventional manner. After completing its work, the application 262 “returns” in a manner that is conventional for local procedure calls, e.g., by returning a result. The stub procedure 272 flattens the result into a message and passes it to the trans-
20 port entity 274, where a reply packet is formed and transferred to the client 110 over the network. Upon receiving the reply packet, the transport entity 224 passes it to the client stub procedure 222 for unflattening. Finally, the stub procedure returns the reply parameters to the client application 212.

 Fig. 3 is a highly schematized diagram of software application components of the
25 server 300. These application components generally interact with an operating system, such as the NetWare operating system available from Novell, Inc., to provide a print server configured to provide print services to clients 110 of network 100. The application components include an accounting application 320 and a printer agent application 330, the latter of which embodies the printer, print queue and print server functions required
30 for conventional queue-based printing. In an alternate embodiment, the printer agent 330

may be embedded into a printer station, such as printer 116, arranged to attach directly to the network 100.

The printer agent is a primary component of a printing architecture, such as the Novell Distributed Print Services (NDPS) printing architecture. The components of the NDPS architecture are independent of any single protocol or operating system and, as such, may be ported to different operating environments based upon the International Standards Organization 10175 Document Printing Application standard and Internet Engineering Task Force RFC 1759. The printer agent 330 may be implemented as part of a NDPS manager component of the NDPS architecture; the NDPS manager is preferably a NetWare Loadable Module (NLM) that runs on the NetWare print server. The agent 330 may further be embodied as a software application configured to run in other operating environments, such as Windows NT, Windows 9x, DOS, Unix or Linux, or embedded directly into a printer or print server apparatus.

Other components of the NDPS architecture include a printer device subsystem (PDS), a port handler (PH) and a printer gateway, the latter comprising a software bridge that directly links the printer agent to its printers. The PDS is an NLM that resides on the print server 300 and retrieves printer-specific information for local storage on the server. The PDS is used to create a printer agent 330 for a printer that is not directly attached to the network 100 and for a printer that is directly attached to the network, but that does not include an NDPS gateway. The PH ensures that the PDS can communicate with the printer 116 regardless of the type of physical port or interface being used.

The printer agent 330 is also preferably an NLM that contains information about printers it represents. Such information, including a printer's network address, name, status or other characteristics can be communicated to an NDPS client and managed by a system administrator. The printer agent 330 supports central management of printers on the network 100, as well as the creation and management of print jobs. In essence, the printer agent is a liaison between an NDPS client and printer, so that each print job goes from the client 110 to the printer 116 by way of the printer agent 330.

The printer agent 330 preferably utilizes the RPC protocol to receive print job requests from and send replies to the NDPS client 110. As with the print server 300, the

client 110 may operate with a variety of operating systems, including Windows NT, Windows 9x, DOS, Unix, Linux or Apple OS. Notwithstanding the actual system platform, the operating environment of the client should include an NDPS library or similar facility that provides the required NDPS support for the client. As noted, the NDPS architecture is preferably protocol-independent and, thus, may support other protocols, such as the Hypertext Transfer Protocol (HTTP), the LPR protocol or the Internet Printing Protocol (IPP), instead of RPC.

According to the invention, an application-to-application communication interface is provided between the accounting application 320 and printer agent 330. The interface is preferably embodied as novel application programming interface (API) functions or calls between the applications that provide accounting support for print services, including tracking the production of print jobs and the resources consumed by those jobs. Print jobs are represented in the NDPS architecture as objects having attributes that describe the characteristics of those jobs, such as the number of printed pages. Print drivers capable of specifying those characteristics enable accounting services based on that information. The accounting support services provided by the novel API communication interface facilitate computing of charges by the accounting application 320 for print services and materials used by print clients 110.

The accounting application 320 registers with the printer agent 330 via a conventional interface to provide the agent with, e.g., addresses for the API printer service calls. This conventional interface further allows an external application, such as a scheduler or gateway, to bind itself to the printer agent. Registering of the accounting application service enables the printer agent to know where to call into the accounting service for the novel API functions. As described herein, a callback interface 322 provides callbacks from the printer agent to the accounting service when a job occurs.

Further to the invention, a print client 110 submits print jobs directly to the printer agent 330 rather than into queues as in the conventional queue-based printing system. The novel APIs allow the accounting service application 320 to discover and obtain information about the print jobs as they are created and processed by the printer agent. Such information enables the accounting application to leverage use of conventional

functions directed to acquiring and setting attributes for these print jobs, thereby extending the utility of those conventional functions for the accounting application.

The accounting application 320 may also be provided as an NLM on the NetWare print server 300. There are preferably two ways to launch the accounting application: (i) from a command line of the server and (ii) by populating a printer object that represents the printer agent with the command line information. An example of the command line information is

Load Accounting.NLM PA=PAName <optional parameters>

where the *Accounting.NLM* is the name of the accounting program and *PAName* is the name of the binding printer agent. A *ndps-att-accounting-exec-and-params* attribute of the printer object that represents the printer agent in the database 115, such as the NDPS Managed Object Database, can be populated with the command line information. When activated, the printer agent 330 launches the accounting application 330 using the information stored in this attribute.

The accounting application 320 binds to the printer agent 330 based on the name that it gets from the command line by calling the function *NDPSJPMComm* in the printer agent. This function is preferably exported by the printer agent so it can be found by any NLM that needs it. The function prototype is:

nint NDPSJPMComm(nint cmdCode, void *bufferPtr)

The *cmdCode* parameter contains an opcode indicating the operation to be performed by the printer agent; for example, the opcode is *JPM_OP_BIND_TO_PA*. The *bufferPtr* parameter points to a *BindStruct* structure:

```
typedef struct
{
    nint      majorVersion;
    nint      minorVersion;
    nint      objType;
    puint16   paNamePtr;
    Callback  callBackFnPtr;
    nint      handle;
} BindStruct;
```

The *objType* field of the BindStruct structure is populated with the value *OBJ_TYPE_ACCOUNTING* that informs the printer agent that the application requesting to bind is an accounting service. The *paNamePtr* points to the name of the printer agent 330 to which the accounting application is to bind. The *callbackFnPtr* contains the address of the function that the printer agent calls to unbind with the accounting application. The *handle* field contains a unique integer value included in any calls from the printer agent 330 to the accounting application 320. This handle identifies the calling printer agent to an accounting service that may be bound to multiple printer agents.

After setting the appropriate information from the BindStruct structure, the printer agent returns the same structure to the accounting application with the following fields modified: *callbackFnPtr* is set to the address of the printer agent callback function (NDPSJPMComm) and *handle* is set to the handle that the accounting application includes with calls to the NDPSJPMComm function to identify the intended printer agent for the request.

The accounting application 320 registers one or more of three function pointers with the printer agent 330 by calling the callback function *NDPSJPMComm* in the printer agent 330. The *cmdCode* parameter for this operation is preferably *JPM_OP_REG_ACCOUNTING_FN_PTRS* and the *bufferPtr* points to a RegisterAccountingFnPtrs structure:

```

20     typedef nint (*AccountingNoPathFnPtr)(void);
        typedef nint (*AccountingWithPathFnPtr)(nint jobId, nuint8 *path);

        typedef struct
        {
25             nint                paHandle;
                AccountingNoPathFnPtr    callApprovalBeforeDataFnPtr;
                AccountingWithPathFnPtr  callApprovalWithDataFnPtr;
                AccountingWithPathFnPtr  callBillingFnPtr;
                void                reserved1;
30             void                reserved2;
        } RegisterAccountingFnPtrs;

```

According to the invention, the printer agent employs the novel print service APIs (i) before a print job is created, (ii) after the print job is created and (iii) when processing

of the print job is complete. Broadly stated, the first print service API is called by the printer agent when the client submits a request to create a print job. The accounting application can either reject the print job, accept the print job or instruct the printer agent to put an accounting hold on the print job. In the latter case, the job does not print until the
 5 accounting application removes the hold.

The second print service API is called by the printer agent when the creation of the print job is complete, but before the job is scheduled for printing. This function call is similar to the first API, with the exception that it includes a job identifier so that the accounting application can evaluate and act upon the attributes of the job, and a path to a
 10 file directory where corresponding print data is stored. As with the first API, the accounting application can reject the print job, accept the job or instruct the printer agent to put an accounting hold on the job. The third print service API is called by the printer agent when processing and/or printing of the print job is completed. The third function provides a job identifier and a file path to a corresponding document data file associated
 15 with the job so that the accounting application can evaluate the completed job and perform any appropriate accounting operations.

As print jobs are submitted to the printer agent 330 from the NDPS client 110, the agent calls each of the three (3) novel API print service functions (assuming the respective function is registered):

20 1. When a print request is received, the printer agent calls the *callApprovalBeforeDataFnPtr* function before the print job is created.

(a) If the accounting application 320 returns a value greater than zero, the printer agent 330 creates the print job with an accounting hold. The print job will not print until the accounting application or some other action removes the hold.
 25 This permits the evaluation and/or manipulation of the job after it is created and before it is processed.

(b) If the accounting application returns a value less than zero, the printer agent rejects the print job and returns the following error code to the client 110:
NWDP_SERVICE_ACCTG_SERVICE_ERR.

(c) If the accounting application returns a value of zero, the printer agent creates the print job without applying any change to the job.

2. When the printer agent 330 finishes creating the print job, it calls the *callApprovalWithDataFnPtr* before passing the job to the scheduler (not shown). The parameters for this call include a job identifier and a path to a file directory where the document print data is stored. The accounting application 320 can then perform any of the following steps:

(a) Using the job identifier and the document data file path, it can examine the print data.

(b) Using the job identifier, it can submit requests to the printer agent to query and modify attributes of Job and Document objects for the respective print job through the NDPSJPMCom interface 332.

(c) Using the information obtained in Steps a and b, it can generate accounting and/or billing information. This information can be stored in the Job object or can be handled separately by the accounting application.

3. When the printer agent 330 finishes processing the print job, it calls the *callBillingFnPtr*. The parameters for this call also include the job identifier and path to the file directory where the document print data is stored. The accounting application 320 can perform any of the following steps:

(a) Using the job identifier and the document data file path, it can examine the print data.

(b) Using the job identifier, it can submit requests to the printer agent to query and modify attributes of the Job and Document objects for the respective print job through the NDPSJPMCom interface 332. In the case of a printer agent that supports a fairly capable printer, the Job and Document objects contain useful information about the processed job, including the number of sheets of paper consumed, the bytes processed, etc.

(c) Using the information obtained in Steps a and b, it can generate accounting and/or billing information. This information can be stored in the Job object or can be handled separately by the accounting application.

When the printer agent 330 “shuts down”, it issues an UnBind request to the accounting service application 320. Both applications “clean up” their respective association information so that it is safe for either application to unload. The accounting service can also initiate an UnBind request.

In summary, the interaction between the printer agent 330 and accounting application 320 are schematically shown by Steps A-D in Fig. 3. In Step (A) the accounting application 320 calls the printer agent 330 to bind through the NDPSJPMCom interface 332. The printer agent 330 returns a handle for subsequent calls. The accounting application 320 also calls the printer agent 330 to register one or more of the three novel API accounting functions. The accounting application can further call the printer agent to unbind through the NDPSJPMCom interface 332. In Step (B), the printer agent 330 calls the accounting application 320 through the callback interface 322 to initiate an unbind. In Step (C), the printer agent calls the registered API accounting functions as print jobs are created and processed. Finally, in Step (D), the accounting application 320 can inspect the document print data, if necessary, that is stored on the data store 115.

Advantageously, the inventive print service accounting APIs provide an extensive set of information about print jobs that is generally more complete than that provided by conventional print systems. In particular, the novel communication interface provides developers with information needed to render decisions about print jobs as requests are received by the printer agent and as print jobs are created and processed.

The foregoing description has been directed to specific embodiments of this invention. It will be apparent, however, that other variations and modifications may be made to the described embodiments, with the attainment of some or all of their advantages. Therefore, it is the object of the appended claims to cover all such variations and modifications as come within the true spirit and scope of the invention.

What is claimed is:

CLAIMS

- 1 1. A communication interface between an accounting application and a printer agent ap-
2 plication executing on a computer network, the interface comprising:
3 application programming interface (API) functions exchanged between the appli-
4 cations that provide accounting support for print services directed to a print job received
5 by the printer agent, the accounting support services including tracking production of the
6 print job and computer network resources consumed by the job, the API functions com-
7 prising a first print service API that is called by the printer agent before the print job is
8 created and that enables the accounting application to one of reject the print job, accept
9 the print job and instruct the printer agent to place an accounting hold on the print job.
- 1 2. The communication interface of Claim 1 wherein the API functions further comprise a
2 second print service API that is called by the printer agent after the print job is created
3 and before the job is scheduled for processing, the second print service API including (i)
4 a job identifier for use by the accounting application to evaluate and act upon attributes of
5 the job and (ii) a file path to a document data file associated with the job.
- 1 3. The communication interface of Claim 2 wherein the API functions further comprise a
2 third print service API that is called by the printer agent when processing of the print job
3 is complete, the third print service API including the job identifier and the file path to the
4 document data file associated with the job, the file path used by the accounting applica-
5 tion to evaluate the completed job and perform accounting operations.
- 1 4. The communication interface of Claim 3 wherein the accounting application and
2 printer agent execute on a print server of the computer network, and wherein the API
3 functions facilitate computing of charges by the accounting application for print services
4 and materials used by a print client of the computer network.

- 1 5. A method for communicating between applications executing on a computer network,
2 the method comprising the steps of:
3 providing an accounting application configured to run on a first device coupled to
4 the network;
5 providing a printer agent application configured to run on a second device cou-
6 pled to the network, the printer agent representing a printer on the network and contain-
7 ing information about the printer; and
8 exchanging application programming interface (API) function calls between the
9 applications that provide accounting support for print services relating to a print job re-
10 ceived by the printer agent and directed to the printer, the accounting support services
11 including tracking production of the print job and resources consumed by the job.
- 1 6. The method of Claim 5 wherein the first device is a computer and the second device is
2 the printer, and wherein information contained in the printer agent comprises a network
3 address of the printer and a status of the printer.
- 1 7. The method of Claim 5 wherein the step of exchanging comprises the step of calling a
2 first print service API at the printer agent before the print job is created, the first print
3 service API enabling the accounting application to one of reject the print job, accept the
4 print job and instruct the printer agent to place an accounting hold on the print job.
- 1 8. The method of Claim 7 wherein the step of exchanging further comprises the step of
2 calling a second print service API at the printer agent after the print job is created and
3 before the job is scheduled for processing, the second print service API including (i) a job
4 identifier for use by the accounting application to evaluate and act upon attributes of the
5 job and (ii) a file path to a document data file associated with the job.
- 1 9. The method of Claim 8 wherein the step of exchanging further comprises the step of
2 calling a third print service API at the printer agent when processing of the print job is
3 complete, the third print service API including the job identifier and the file path to the

4 document data file associated with the job, the file path used by the accounting applica-
5 tion to evaluate the completed job and perform accounting operations.

1 10. The method of Claim 9 further comprising the step of registering the accounting ap-
2 plication with the printer agent to provide the printer agent with addresses for the API
3 print service calls.

1 11. The method of Claim 10 further comprising the steps of, wherein the first and second
2 devices comprise a single print server:

3 submitting the print job from a print client on the network to the printer agent;
4 obtaining information about the print job at the accounting application using the
5 API function calls; and
6 using the obtained information to leverage functions directed to acquiring and
7 setting attributes for the print job, thereby extending the utility of the attribute functions
8 for the accounting application.

1 12. A computer readable medium containing executable program instructions for com-
2 municating between applications executing on a computer of a network, the executable
3 program instructions comprising program instructions for:

4 configuring an accounting application to run on the computer;
5 configuring a printer agent application to run on the computer, the printer agent
6 representing a printer on the network and containing information about the printer; and
7 exchanging application programming interface (API) function calls between the
8 applications that provide accounting support for print services relating to a print job re-
9 ceived by the printer agent and directed to the printer, the accounting support services
10 including tracking production of the print job and computer resources consumed by the
11 job.

1 13. The computer readable medium of Claim 12 wherein the program instruction for ex-
2 changing comprises the program instruction for calling a first print service API at the

3 printer agent before the print job is created, the first print service API enabling the ac-
4 counting application to one of reject the print job, accept the print job and instruct the
5 printer agent to place an accounting hold on the print job.

1 14. The computer readable medium of Claim 13 wherein the program instruction for ex-
2 changing further comprises the program instruction for calling a second print service API
3 at the printer agent after the print job is created and before the job is scheduled for proc-
4 essing, the second print service API including (i) a job identifier for use by the account-
5 ing application to evaluate and act upon attributes of the job and (ii) a file path to a
6 document data file associated with the job.

1 15. The computer readable medium of Claim 14 wherein the program instruction for ex-
2 changing further comprises the program instruction for calling a third print service API at
3 the printer agent when processing of the print job is complete, the third print service API
4 including the job identifier and the file path to the document data file associated with the
5 job, the file path used by the accounting application to evaluate the completed job and
6 perform accounting operations.

1 16. The computer readable medium of Claim 15 further comprising the program instruc-
2 tion for registering the accounting application with the printer agent to provide the printer
3 agent with addresses for the API print service calls.

1 17. The computer readable medium of Claim 16 further comprising program instructions
2 for, wherein the computer is a print server:

3 submitting the print job from a print client on the network to the printer agent;
4 obtaining information about the print job at the accounting application using the
5 API function calls; and
6 using the obtained information to leverage functions directed to acquiring and
7 setting attributes for the print job, thereby extending the utility of the attribute functions
8 for the accounting application.

ABSTRACT OF THE DISCLOSURE

An application-to-application communication interface between an accounting service application and a printer agent application resides on a computer network. The interface is embodied as novel application programming interface (API) functions or calls
5 between the applications that provide accounting support for print services, including tracking the production of print jobs and the resources consumed by those jobs. The accounting support services provided by the novel API communication interface facilitate computing of charges by the accounting application for print services and materials used by print clients.

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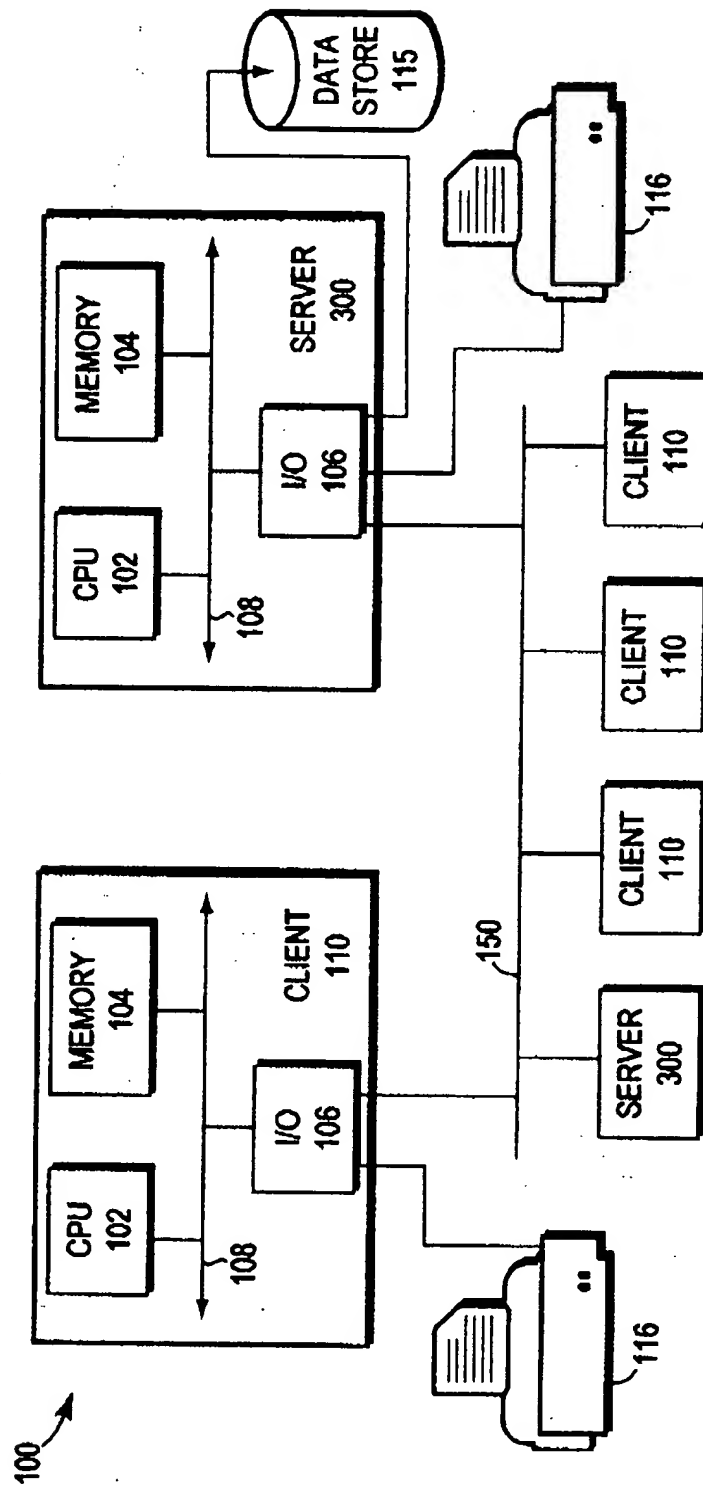


FIG. 1

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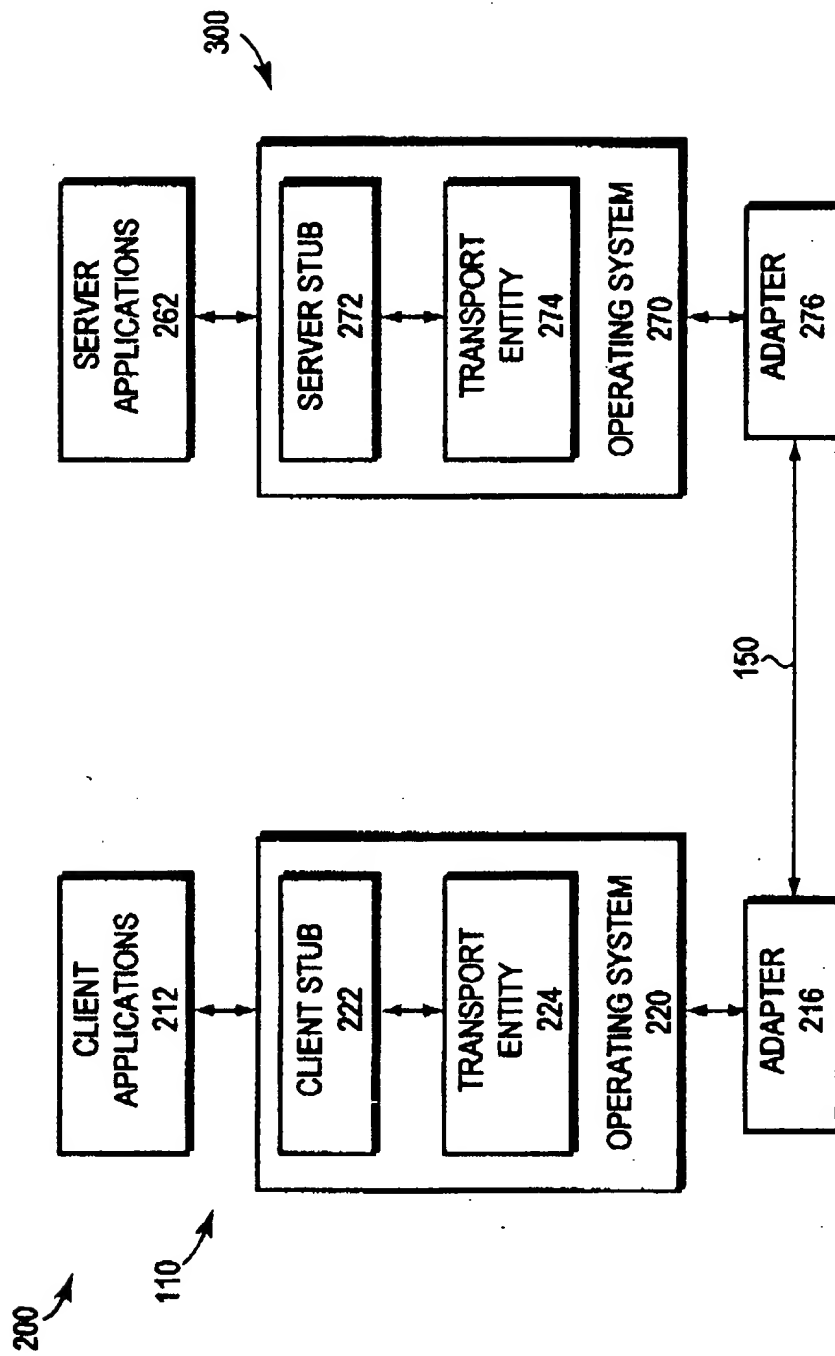


FIG. 2

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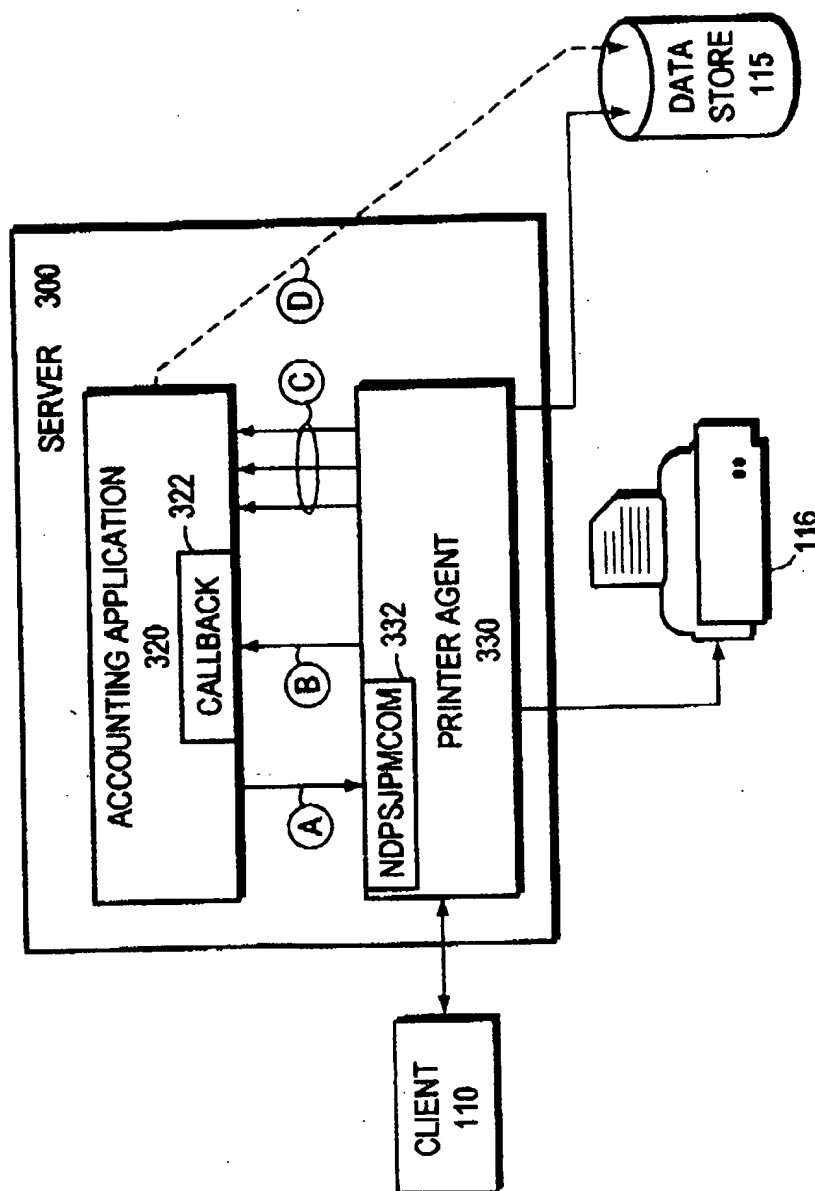


FIG. 3